

REMARKS

Claims 31, 35-48, and 50-53 are currently pending in the present application, including independent claim 31. Independent claim 31 is directed to a substrate for reducing odor. The substrate is porous and comprises a nonwoven, woven, or paper web. The substrate contains colloidal silica nanoparticles configured to adsorb one or more odorous compounds. The silica nanoparticles have an average size of from about 1 to about 50 nanometers and a surface area of from about 50 to about 1000 square meters per gram. Further, the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram. Without intending to be limited by theory, the present inventors believe that the solid nature, i.e., low pore volume, of the colloidal nanoparticles may enhance the uniformity and stability of the nanoparticles, without sacrificing its odor adsorption characteristics.

In the Office Action, independent claim 31 was rejected under 35 U.S.C. § 102(b) as being anticipated by EP1188854 to Honda, et al. Honda, et al. is directed to a photocatalyst; specifically, a complex oxide containing titanium and silicon. Applicants respectfully submit, however, that Honda, et al. fails to disclose various aspects of independent claim 31. Particularly, in the Amendment dated May 29, 2007, Applicants amended independent claim 31 to include the limitation that the silica nanoparticles are “configured to adsorb one or more odorous compounds.” The present Office Action did not address the ramifications of this Amendment.

Honda, et al. discloses that the invention’s primary function is to decompose malodorous compounds rather than adsorb them:

There are also known deodorants which utilize physical adsorption, such as active carbon and silica. However, with these, the malodorous compounds are adsorbed and not decomposed, so they do not fundamentally resolve the situation. Ideally, it is necessary that malodorous compounds be completely decomposed to odorless components. pg. 2, ¶ [0005], ll. 30-32.

Honda, et al. gives further reasons why the invention is not configured to adsorb odorous compounds:

In the case of fibre structures which have been subjected to such deodorant processing, the adsorbed components may themselves give rise to a bad smell or the malodorous components may be changed by decomposition into other components which themselves produce a strange smell. pg. 2, ¶ [0007], ll. 44-46.

Honda, et al. utilizes a photocatalyst in order to decompose odorous compounds rather than being configured to adsorb them as claim 31 requires.

Furthermore, claim 31 includes the limitation that the substrate contains colloidal silica nanoparticles. Honda, et al. does not disclose the use of silica nanoparticles. Specifically, Honda, et al. utilizes a complex oxide of silica and titanium yielding characteristics wholly different than the claimed colloidal silica nanoparticles. For instance Honda, et al. states:

In other words, the complex oxides of titanium and silicon are not simple mixtures of titanium oxide and silicon oxide, but are recognized as exhibiting characteristic properties due to the fact that the titanium and silicon form a so-called binary oxide. Furthermore, the results of X-ray diffraction analysis have shown that this composite oxide has a non-crystalline or essentially non-crystalline microstructure. pg. 3, ¶ [0016], ll. 42-46.

As such, Honda, et al. can not be said to anticipate a substrate containing colloidal silica nanoparticles.

Additionally, as the Office Action correctly indicates, Honda, et al. does not disclose the limitation that the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram. However, the Office Action found this claimed feature to be inherently disclosed in Honda, et al. Applicants respectfully disagree. As discussed above, Honda, et al. specifically discloses that the complex oxide of titanium and silicon exhibits properties wholly different from a simple mixture of silicon and titanium particles. Thus, Applicants submit that simply because the complex titanium-silicon oxide of Honda, et al. may yield particles of similar size and surface area, it is improper to conclude that these particles inherently disclose a property (i.e., pore volume) that is the same as the claimed silica nanoparticles.

Thus, for at least the reasons set forth above, Applicants respectfully submit that independent claim 31 patentably defines over Honda, et al. Further, at least for the reasons indicated above relating to independent claim 31, the corresponding dependent claims also patentably define over the references cited. However, the patentability of the dependent claims certainly does not hinge on the patentability of the independent claim.

In addition to the rejection noted above, various claims were also provisionally rejected under the judicially created doctrine of obvious-type double patenting in view of pending U.S. Application Serial No. 10/686,938. To the extent necessary, Applicants agree to submit a terminal disclaimer at such time that the application is otherwise in condition for allowance.

Finally, dependent claim 49 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter. Specifically, the Office Action indicates that it is not clear how much non-silica may be present in the particles to qualify the particles as being "primarily from silica." Applicants respectfully disagree. Applicants note that the fact that the claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. § 112, second paragraph. Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification. MPEP § 2173.05(b). Applicants submit that one of ordinary skill in the art would understand the ramifications of the "primarily from silica" limitation. For instance, the specification discloses that various Snowtex® products from Nissan Chemical may be utilized as the silica nanoparticles (e.g., Snowtex-C, Snowtex-O, Snowtex-PS, Snowtex-OXS, Snowtex-AK). Spec., pg. 6, lines 4-9. One of ordinary skill in the art would understand that these products, for instance, are formed "primarily from silica." As such, Applicants respectfully request withdrawal of the rejection.

Furthermore, Applicants submit that new dependent claim 53 is also in compliance with 35 U.S.C. § 112, second paragraph. Dependent claim 53 limits the silica nanoparticles to consisting essentially of only silica (e.g., Snowtex-C, Snowtex-O, Snowtex-PS, Snowtex-OXS) or alumina-coated silica (e.g., Snowtex-AK).

Applicants respectfully submit that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Silverman is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Amendment.

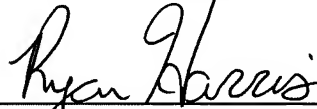
Appl. No. 10/686,933
Amdt. dated Oct. 25, 2007
Reply to Office Action of June 25, 2007

Please charge any additional fees required by this Amendment to Deposit

Account No. 04-1403.

Respectfully requested,

DORITY & MANNING, P.A.

A handwritten signature in black ink, appearing to read "Ryan P. Harris", written over a horizontal line.

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